Amendments to the claims:

1. **(Currently amended)** A microfluidic analytical device comprising:

a microfluidic separation column containing stationary phase material and adapted to perform a pressure-driven chromatographic separation process;

an optical detection region ~~in fluid communication with~~ disposed downstream of the microfluidic separation column, the optical detection region being substantially free of stationary phase material and being bounded by at least one substantially optically transmissive material; and

a substantially planar porous membrane disposed downstream of the optical detection region, the porous membrane permitting liquid flow therethrough at an operating pressure.

2. **(Cancelled)**

3. **(Previously presented)** The device of claim 1 wherein the membrane is a permeable polyolefin membrane.

4. **(Cancelled)**

5. **(Cancelled)**

6. **(Original)** The device of claim 1 wherein the device is substantially planar and comprises a plurality of substantially planar device layers.

7. **(Original)** The device of claim 1 wherein the plurality of device layers comprises adhesiveless polymeric layers that are interpenetrably bound together to form a substantially sealed microstructure.

8. **(Original)** The device of claim 7 wherein each device layer of plurality of device layers is substantially metal-free.

9. **(Original)** The device of claim 6 wherein the plurality of substantially planar device layers includes a plurality of stencil layers.

10. **(Previously presented)** The device of claim 9 wherein the porous membrane is disposed between at least two stencil layers of the plurality of stencil layers.

11. **(Original)** The device of claim 1 wherein the stationary phase material includes packed particulate matter.

12. **(Original)** The device of claim 1 wherein the microfluidic analytical device is adapted to withstand an internal pressure of at least about 100 psi and remain substantially sealed.

13. **(Currently amended)** A microfluidic analytical device comprising:

a plurality of microfluidic separation columns each containing stationary phase material;

a plurality of optical detection regions, each optical detection region of the plurality of optical detection regions being disposed downstream of ~~associated with~~ and in fluid communication with a different microfluidic separation column of the plurality of separation columns, ~~each optical detection region~~ being substantially free of stationary phase material, and being bounded by at least one substantially optically transmissive material; and

at least one porous membrane disposed downstream of the plurality of optical detection ~~windows~~ regions, the at least one porous membrane permitting liquid flow therethrough at an operating pressure.

14. **(Original)** The device of claim 13, further comprising a fluidic distribution network in fluid communication with the plurality of microfluidic separation columns.

15. **(Original)** The device of claim 13 wherein the device is substantially planar and comprises a plurality of substantially planar device layers.

16. **(Original)** The device of claim 13 wherein the plurality of device layers comprises adhesiveless polymeric materials that are interpenetrably bound together to form a substantially sealed microstructure.

17. **(Previously presented)** The device of claim 16 wherein each device layer of the plurality of device layers is substantially metal-free.

18. **(Original)** The device of claim 15 wherein the plurality of device layers includes a plurality of stencil layers.

19. **(Previously presented)** The device of claim 18 wherein the at least one porous membrane is disposed between at least two stencil layers of the plurality of stencil layers.

20. **(Original)** An analytical system comprising:

the device of claim 13;

a fluidic distribution network in fluid communication with the plurality of microfluidic separation columns;

a common mobile phase supply source in fluid communication with the plurality of microfluidic separation columns through the fluidic distribution network;

at least one illumination source in optical communication with the plurality of optical detection regions; and

at least one optical detector in optical communication with the plurality of optical detection regions.

21. **(Currently amended)** A microfluidic device comprising:

a plurality of substantially planar device layers defining ~~a first aperture, a second aperture,~~ a separation region, an impedance region, and an optical detection region disposed in a fluid flow path between the separation region and the impedance region, the optical detection region being substantially free of stationary phase material and being bounded along at least one surface by a substantially optically transmissive material~~, the optical detection region being in fluid communication with the first aperture and the second aperture~~;

wherein the impedance region includes a first aperture defined in a first device layer of the plurality of device layers, a second aperture defined in a second device layer of the plurality of device layers, and a substantially planar porous membrane disposed between the first aperture and the second aperture, with the porous membrane permitting liquid flow

therethrough and being adapted to permanently elevate the backpressure within the optical detection region.

22. **(Original)** The device of claim 21, further comprising at least one microfluidic separation column adapted to perform pressure-driven liquid chromatography, the separation column being disposed upstream of the optical detection region.

23. **(Original)** The device of claim 21 wherein the plurality of substantially planar device layers includes a plurality of stencil layers.

24. **(Currently amended)** A liquid chromatography system comprising:

a plurality of separation columns adapted to perform pressure-driven liquid chromatographic separation;

an illumination source;

an optical detector;

a plurality of optical detection regions disposed downstream of the plurality of separation columns, each optical detection region of the plurality of optical detection regions being in fluid communication with ~~one~~ a different separation column of the plurality of separation columns, and each optical detection region being in optical communication with the illumination source and optical detector; and

at least one porous membrane disposed downstream of the plurality of optical detection regions and in fluid communication with the plurality of optical detection regions, the at least one porous membrane being adapted to elevate the backpressure within the plurality of optical detection regions.

25. **(Original)** The system of claim 24, further comprising a mobile phase supply system.

26. **(Previously presented)** The system of claim 24 wherein each separation column of the plurality of separation columns is microfluidic.

27. **(Currently amended)** A microfluidic analytical device comprising:

a plurality of adhesiveless substantially planar polymeric device layers defining a plurality of inlet ports, a plurality of outlet ports, and a plurality of microfluidic separation columns, with each separation column of the plurality of separation columns containing packed particulate stationary phase material retained by a frit;

a plurality of optical detection regions, each optical detection region being ~~associated with~~ disposed downstream of and in fluid communication with a different ~~microfluidic~~ separation column of the plurality of separation columns, being substantially free of stationary phase material, and ~~each optical detection region~~ being bounded by at least one substantially optically transmissive material; and

at least one porous material disposed downstream of the plurality of optical detection ~~windows~~ regions, the at least one porous material permitting liquid flow therethrough at an operating pressure;

wherein the plurality of adhesiveless polymeric device layers are interpenetrably bound together to form a substantially sealed microstructure.

28. **(Previously presented)** The device of claim 27 wherein each device layer of the plurality of device layers is substantially metal-free.

29. **(Previously presented)** The device of claim 27 wherein the plurality of device layers includes a first substrate layer, a second substrate layer, and a plurality of stencil layers disposed between the first substrate layer and the second substrate layer.

30. **(Previously presented)** The device of claim 27 wherein the plurality of device layers comprises a polyolefin material.

31. **(Previously presented)** The device of claim 27 wherein the at least one porous material includes at least one porous membrane disposed between two device layers of the plurality of device layers.

32. **(Previously presented)** The device of claim 27 wherein the at least one porous material includes a porous monolith polymerized within the device.

33. **(Previously presented)** The device of claim 27 wherein the device is adapted to withstand an operating pressure of at least about 100 psi and remain substantially sealed.

34. **(Previously presented)** An analytical system comprising:

the device of claim 27;

a fluidic distribution network in fluid communication with the plurality of microfluidic separation columns;

a common mobile phase supply source in fluid communication with the plurality of microfluidic separation columns through the fluidic distribution network;

at least one illumination source in optical communication with the plurality of optical detection regions; and

at least one optical detector in optical communication with the plurality of optical detection regions.